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GENERAL REQUIREMENTS FOR SELF-PROPELLED CONVEYOR-BELT LOADER

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 1

May 1989

Indian Standard

GENERAL REQUIREMENTS FOR SELF-PROPELLED CONVEYOR-BELT LOADER

0. FOREWORD

0.1 This Indian Standard was adopted by the Bureau of Indian Standards on 11 January 1989, after the draft finalized by Air Cargo Handling Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 In the preparation of this standard, assistance has been derived from IATA/AHM 925 'Functional specification for self-propelled conveyor-belt loader', issued by the International Air Transport Association (IATA).

1. SCOPE

1.1 This standard specifies the general requirements for self-propelled conveyor-belt loader designed for loading/unloading baggage, cargo or mail to/from aircraft holds with sill height ranging from 1·2 to 3·5 m.

2. STRUCTURE AND OVERALL DIMENSIONS

2.1 Mounted on an adequate chassis, the conveyor-belt loader shall have a boom and an operator's driving position.

2.2 The elevation heights of the boom of the conveyor-belt loader shall be as follows:

a) At the aircraft end, the conveyor-belt shall reach any height between 1·2 and 3·5 m;

b) On the ramp end, the conveyor-belt shall reach any height between 0·5 and 1·4 m; and

c) The elevation of both ends shall be independent of each other.

2.3 The conveyor-belt loader shall be capable of servicing any aircraft sill height indicated in **2.2** (a) with the ramp end not higher than 760 mm.

2.4 The overall length of the unit shall be given by the boom length.

2.5 The overall width of the unit shall be less than 2 m.

2.6 The unit shall have a minimum under clearance of 127 mm from any portion of the equipment to the ground when negotiating two ramps that intersect at 5°.

3. BOOM DESIGN

3.1 Access to the Aircraft

3.1.1 The design of the boom shall be such that it can be used by the operator to gain access to the hold door and safely open or close it, enter the hold or exit from it. Consequently, the following features are required:

a) A handrail on one long side of the boom which shall be foldable or retractable below the belt plane,

b) A non-slip belt surface under any weather condition for personnel safety, and

c) A maximum angle in operation of 24° (45 percent).

3.1.2 The width of the boom at the aircraft end shall not exceed 0·8 m.

3.2 Belt

3.2.1 The belt shall be 0·6 m wide, with no part protruding from its outer surface.

3.2.2 The belt shall be designed to provide for adequate drainage of water.

3.2.3 The belt friction shall prevent the load from slipping or rolling back at maximum angle even when starting.

3.2.4 The belt shall be adequately supported by rollers and/or other devices to allow safe conveyance of load and handling personnel.

3.2.5 The belt drive system shall not slip under maximum load and any weather condition.

3.2.6 The belt tension shall be self-adjusting. An easy manual adjustment shall also be provide.

3.3 Load Limitation

3.3.1 The linear load admissible locally shall be in excess of 2·45 kN/m.

3.3.2 The allowable single load shall be at least 1·47 kN and the minimum total capacity of the conveyor-belt shall be 4·90 kN.

3.3.3 The boom, belt and rollers shall withstand the impact of a piece of cargo weighing 1·47 kN falling from a height of 0·3 m.

3.4 Loading Speed — The belt speed shall be adjustable from 10 to 30 m/min.

3.5 Guide Rails

3.5.1 The lateral guide rails shall be installed on each long side of the boom. They shall be retractable below the belt surface. Their internal surface shall be smooth.

3.5.2 The width between them shall be 0·8 m, *Min.*

3.5.3 They shall extend a minimum of 100 mm above the belt.

3.5.4 The rails shall be shorter than the boom and provide lateral access 0·5 m, *Min* at the aircraft side and 1·5 m, *Min* at the ramp side of the boom.

3.6 Operator's Protection

3.6.1 The design of the boom shall be such that the operation shall not present any danger to operator's feet or hands when the belt is moving, or to the driver when the boom is lifting.

3.6.2 The elevation system shall be designed to be fail-safe.

3.6.3 The driver shall be adequately protected from any lateral displacement of the conveyor boom.

3.7 Load Protection — The conveyor-belt specially the ends, shall be designed in such a way as to prevent damage to the loads.

4. MOBILITY AND STABILITY

4.1 The lifting speed shall be such that the up or down movement of the boom along the maximum range of heights will require less than 15 s.

4.2 Simultaneous movement of the belt and the vehicle shall not be possible.

4.3 The unit shall be capable of being driven at speed of up to 40 km/h.

4.4 The overall turn radius shall be less than 7·6 m.

5. CONTROLS

5.1 The controls shall be adequately protected against accidental actuation or damage from falling items of load.

5.2 The up and down movement of each end of the boom shall be controlled from the driver's position only.

5.3 A belt movement control and an emergency stop button shall be provided at both ends of the boom, preferably located on the left-hand side of the driving direction.

6. OPTIONS

6.1 The loader may have the following options:

a) Height range of the boom between 12·2 and 4·1 m at the aircraft end and maximum turn radius of 9·6 m.

b) Minimum height of the boom of 1 m at the aircraft end.

c) Belt speed control at any of the following locations:

  1) Ramp end of boom,

  2) Aircraft end of boom, or

  3) Driver's position.

d) Remote control boxes at the aircraft end of the boom.

e) Height adjustment control for the ramp end at the ramp end of the boom.

f) Horizontal surface at the aircraft end of the boom to enable the operator to stand safely without holding the handrail when opening or closing the aircraft hold door.

g) Provision of handrails on both sides.

h) Towed version.

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 3310131, 3311375

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices:	*Telephone*
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